Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Improving Public Safety Communications in	)	
the 800 MHz Band	)	**WT Docket No. 02-55**
	)	
Consolidating the 900 MHz Industrial/Land	)	
Transportation and Business Pool Channels	)	

Comments of the Private Wireless Coalition

The Private Wireless Coalition (Coalition), hereby respectfully submits its comments in response to the Commission's *Notice of Proposed Rulemaking* (NPRM) in the above-referenced matter.[1] The Coalition includes Aeronautical Radio, Inc. (ARINC), recognized as a non-profit cooperative by the Commission, and the following non-profit trade organizations and their various members: Association of American Railroads (AAR); Forest Industries Telecommunications (FIT); Industrial Telecommunications Association, Inc. (ITA); MRFAC, Inc. (MRFAC); National Association of Manufacturers (NAM); Personal Communications Industry Association (PCIA); and Small Business in Telecommunications (SBT).[2] The Coalition,

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[1] *See* Improving Public Safety Communications in the 800 MHz Band and Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels, *Notice of Proposed Rule Making,* WT Docket No. 02-55 (rel. Mar. 15, 2002) (NPRM).

[2] It deserves noting that MRFAC and NAM have been active in the Coalition to further develop its initial proposal in this proceeding, and have herein joined a larger group of interested parties seeking to find the best remedy for public safety interference in the 800 MHz band. *See,* Letter from Clyde F. Morrow, Sr., President, MRFAC, Inc., and Jerry J. Jasinowski, President, National Association of Manufacturers, to the Honorable Michael K. Powell, Chairman, Federal Communications Commission, dated December 21, 2001.

as a whole, represents virtually all types of licensees in the 800 MHz band, such as many city, county and state municipal licensees, business and industrial licensees (some of which offer their network to support public safety needs), small site-by-site SMR licensees (many of whom offer the same public safety support) and even some larger EA SMR providers.

The comments to follow are the result of multiple meetings with a large cross-section of the industries involved in the above referenced proceeding. The Coalition has specifically met with the public safety community, Nextel, cellular "A" and "B" band licensees, business and industrial/land transportation licensees (B/ILT), SMR operators, mobile satellite service providers, equipment manufacturers, RF engineers, congressional offices and the Commission. After considering the interests of all parties and the expertise provided by those listed above, the Coalition believes that the Commission should move public safety entities to 700 MHz as a long-term solution to the public safety—CMRS interference problem, while in the interim, emphasizing the need for "Best Practices" solutions.[3] Furthermore, the Commission should consider a re-banding solution in conjunction with a public safety move to 700 MHz to help mitigate interference for B/ILT licensees. As a final option if a 700 MHz plan is not feasible, the Commission should consider re-packing the 800 MHz band to minimizing interference in the band.

I. Current 800 MHz Environment

Today's 800 MHz environment is divided up into four sections: the general category pool, the interleaved channels, the Upper 200 MHz SMR channels, and the NPSPAC band.

[3] The Coalition notes that public safety, B/ILT and traditional SMR licensees, whether analog or

A. General Category Channels

The 851-854.75 MHz portion, and its paired low side 806-809.75 MHz,[4] of the 800 MHz band is currently licensed to a mixture of public safety, B/ILT, and SMR users. The Commission auctioned this spectrum, however, for SMR use, and the auction winners now overlay the site-by-site incumbents.[5] The auction winners have no *right* to relocate the incumbents; rather, they may do so through explicit business deals.[6]

B. Interleaved Channels

The 854.75-861 MHz band includes public safety, B/ILT, and SMR users as well, but with recognized channel distinctions. Public safety was allotted 70 channels; business, 50 channels; industrial/land transportation, 50 channels; and SMR operators were designated 80 channels (the Lower 80 SMR).[7] It should be noted, however, that inter-category sharing was

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digital, are not causing the interference, but are instead suffering from it.

[4] The frequency references throughout the rest of this filing only mention the high side, or base station frequency, of the channel pair. All high side frequencies are paired with a low side frequency 45 MHz below.

[5] *See,* Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Bands; Implementation of Sections 3(n) and 322 of the Communications Act—Regulatory Treatment of Mobile Services; and Implementation of Section 309(j) of the Communications Act—Competitive Bidding, PR Docket No. 93-144, GN Docket No. 93-252, PP Docket No. 93-253, *Second Report and Order*, (July 10, 1997) (800 MHz Second Report and Order).

[6] 800 MHz Second Report and Order at ¶ 52, stating "EA licensees on the lower 230 channels [which consist of the 150 general category channels and the Lower 80 SMR channels] will not have the right to move incumbents off of their spectrum blocks unless the incumbent voluntarily agrees to move."

[7] *See* Amendment of Part 90 of the Commission's Rules to Release Spectrum in the 806-821/851-866 MHz Bands and to Adopt Rules and Regulations Which Govern Their Use; Amendment of Part 90 of the Commission's Rules to Facilitate Authorization of Wide-Area Mobile Radio Communications Systems; An Inquiry Concerning the Multiple Licensing of 800 MHz Radio Systems; Amendment of Section 90.385(c) of the Commission's Rules to Allow Transmission of Non-Voice Signals at 800 MHz, PR Docket Nos. 79-191, 79-334, 79-107, 81-703, *Second Report and Order*, (Aug. 16, 1982). These channels were interleaved to support technologies that already existed within the band.

permitted in the interleaved channels, which has diminished the distinct lines of radio services.[8] For example, public safety entities were allowed to acquire B/ILT spectrum if no other public safety spectrum was available in their geographic area. As a result of this sharing, many public safety entities are the end users on B/ILT and traditional SMR licenses.

Similar to general category, an auction of the Lower 80 SMR channels overlapped site-by-site incumbent operations.[9] Auction winners on these 80 channels were also not afforded a *right* to relocate incumbents.[10]

C. Upper 200 SMR

The 861-866 MHz band (the Upper 200 SMR) has also been auctioned.[11] The auction winners in this band, however, have the right to relocate incumbents (site-by-site SMR licensees) to comparable 800 MHz spectrum and facilities.[12] Almost all relocation agreements have been completed, but not all incumbent SMR operators have completed the retuning process. Many of the incumbents were relocated to the general category pool or Lower 80 SMR channels. When SMR operators in the Upper 200 SMR channels were required to relocate after the auction of their spectrum, they were promised, by the Commission, that they would not be required to move again.[13]

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8 NPRM at ¶ 7.

9 800 MHz Second Report and Order.

10 800 MHz Second Report and Order at ¶ 52.

11 *See* Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band, PR Docket No. 93-144, *First Report and Order, Eighth Report and Order, and Second Further Notice of Proposed Rule* Making (Dec. 15, 1995) (800 MHz Report and Order).

12 800 MHz Report and Order at ¶ 73-75.

13 800 MHz Second Report and Order at ¶ 52, stating that "it is likely that many of the incumbents who will operate on these [lower 230] channels will have relocated from the upper 200 channels, and we

D. NPSPAC Channels

The 866-869 MHz band is currently dedicated to public safety operations, nationwide.[14] Immediately adjacent to the NPSPAC channels, above 869 MHz, you will find cellular "A" block and cellular "B" block operations.

The public safety community has a total of 9.5 MHz of paired spectrum in the 800 MHz band, not including their site-by-site general category pool frequencies. 3.5 MHz of paired public safety spectrum resides within the interleaved channels and 6 MHz of paired spectrum is available in the NPSPAC band.

Business licensees have access to 10 MHz of spectrum in the 800 and 900 MHz bands; specifically, 2.5 MHz of paired spectrum within the interleaved channels at 800 MHz and 2.5 MHz of spectrum (100 paired channels at 12.5 kHz) in the 900 MHz band. Similarly, industrial/land transportation (I/LT) licensees use 2.5 MHz of paired spectrum in the interleaved channels and 2.5 MHz of spectrum at 900 MHz, totaling 10 MHz of spectrum for both business and I/LT users in the 800 and 900 MHz bands. Some incumbent B/ILT licensees still remain in the general category pool as well, adding a small amount of spectrum to this total.

SMR licensees currently hold 4 MHz of spectrum in the interleaved channels and 10 MHz in the Upper 200 SMR channels at 800 MHz. Furthermore, they have access to 5 MHz of

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have already determined that such relocates should not be required to relocate more than once."

[14] *See* Amendments of Parts 2 and 22 of the Commission's Rules Relative to Cellular Communications Systems; Amendment of Parts 2, 15, and 90 of the Commission's Rules and Regulations to Allocate Frequencies in the 900 Reserve Band for Private Land Mobile Use; Amendments of Parts 2, 22 and 25 of the Commission's Rules to Allocate Spectrum for, and to Establish Other Rules and Policies Pertaining to the Use of Radio Frequencies in a Land Mobile Satellite Service for the Provision of Various Common Carrier Services, GEN Docket Nos. 84-1231, 84-1233, and 84-1234, *Report and Order* (Sept. 26, 1986).

spectrum at 900 MHz. The 7.5 MHz of general category spectrum has been auctioned to SMR licensees as well. It should be noted however, that many site-by-site incumbent operators still exist in these bands, and are afforded protection from the EA license winner.[15]

II. Discussion

Solving the critical needs of public safety can be broken down into long-term and short-term solutions. The Coalition suggests that the Commission move public safety systems to 700 MHz as the best possible long-term solution. In the interim, the Coalition recommends that, at a minimum, an emphasis be placed on the *Best Practices Guide* (Best Practices) as a way to solve interference on a case-by-case basis.[16] Furthermore, the Coalition suggests that the Commission consider re-packing the 800 MHz band as a possible mitigation tool for interference resolution experienced by B/ILT licensees during the implementation of a 700 MHz plan for public safety users.

A. The Coalition Suggests that the Commission Move Public Safety Systems to 700 MHz for the Best Long-Term Solution to the Public Safety-CMRS Interference Problem

After fully vetting all of the technical issues involved with public safety—CMRS interference, it is the conclusion of this Coalition that an 800 MHz re-banding solution will not completely alleviate the interference problem without the purchase of all new equipment by all

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[15] 800 MHz Second Report and Order at ¶ 64-69.

[16] *See generally*, *Avoiding Interference Between Public Safety Wireless Communications Systems and Commercial Wireless Communications Systems at 800 MHz—A Best Practices Guide*, December 2000 (Best Practices).

incumbent operators.[17] On the other hand, moving all public safety systems currently operating in the 800 MHz band to the 700 MHz band removes public safety entities from the problem areas, and fulfills the goal of this proceeding—to improve public safety communications.[18] If public safety licensees relocate to the 700 MHz band, they will no longer have to concern themselves with intermodulation products and receiver overload interference (*i.e.*, receiver blocking, local oscillator interference and receiver "desense")[19] from licensees employing a cellular system architecture.[20] A 700 MHz solution, therefore, moves public safety operations far enough away from cellularized operations to avoid future harmful interference from CMRS systems.

In the Commission's *Second Report and Order* in the guard band proceeding, a cellular system architecture is characterized as one in which "large geographic service areas are segmented into many smaller areas or cells, each of which uses its own base station, to enable

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[17] Incumbent operators should be defined as public safety, B/ILT or SMR entities that were licensed on a site-by-site basis prior to the "overlay" of auction winners in the 800 MHz band. Many of the incumbent operators that experience interference utilize non-cellularized equipment that is simply not compatible with Nextel's cellular system architecture.

[18] Alternatively, removing Nextel Communications, Inc. (Nextel) and other licensees employing a cellular system architecture from the 800 MHz band will also serve to alleviate a substantial portion of the interference experienced by public safety entities. If cellularized carriers relocate, however, NPSPAC licensees may still be subject to interference from cellular "A" and "B" block licensees. This Coalition has no preference as to whether public safety or Nextel relocates, but instead intends to emphasize the fact that moving one of these two groups out of the 800 MHz band will best resolve the interference problem public safety is currently suffering. The remainder of this filing will focus on the relocation of public safety to 700 MHz, but the Coalition asks the Commission to recognize that Nextel may be a suitable relocatee in the event that public safety cannot move.

[19] Best Practices, at p. 8, where common types of interference to public safety systems are described. Intermodulation is a mixing of two or more frequencies by different carriers. Receiver blocking is "when an extremely strong signal or signals blocks out reception of the desired signal. Local oscillator interference occurs when noise from a local oscillator mixes with a strong, nearby undesired signal." Receiver desense is produced by a close, strong signal that minimizes the gain of the amplifying stages of the receiver.

[20] *See* Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, WT Docket No. 99-168, *Second Report and Order* (rel. Mar. 9, 2000) (Guard Band

frequencies to be reused at relatively short distances."[21] In order to ensure that a situation similar to the one currently in place at 800 MHz does not arise, the Coalition urges the Commission to specifically prohibit operations at 700 MHz that meet all of the following criteria:

- A site operating with more than 5 overlapping, interactive sites featuring hand-off capability;
- A site operating with antenna heights of less than 100 feet above ground level on HAATs of less than 500 feet; and
- A site with more than 20 paired frequencies on the license.

A 700 MHz plan should specifically move public safety licensees in the interleaved channels, the NPSPAC band and those existing as incumbents in the general category pool to the 30 MHz of spectrum that the Commission has earmarked for commercial services at 747-762/777-792 MHz.[22] It is this Coalition's view that this proceeding should not be about the location of additional spectrum for public safety, as opposed to the correction of interference to public safety systems. Nonetheless, when considering the 24 MHz of spectrum already allotted for public safety services in the 700 MHz band, this proposal would offer a total of 54 MHz of spectrum at 700 MHz. This represents an increase of approximately 25 MHz of spectrum for public safety entities that will be free from cellular system infrastructure. The Coalition recognizes, of course, that migration to this additional spectrum for public safety entities could take time due to the existing broadcast operations in some major metropolitan areas, equipment development, and the need to provide financing for the relocation.

Service Rules).

[21] Guard Band Service Rules at ¶ 14 and n. 34.

[22] Reallocation of Television Channels 60-69, The 746-806 MHz Band, ET Docket No. 97-157, *Report and Order*, (1998).

After public safety licensees have migrated down to 700 MHz, the Commission could auction the vacated spectrum, permitting auction revenues to help pay for the relocation of public safety entities to 700 MHz.[23] The Commission has existing auction authority over the spectrum under Section 309(j)(1) of the Communications Act, which states, if "mutually exclusive applications are accepted for any initial license or construction permit, then…the Commission shall grant the license or permit to a qualified applicant through a system of competitive bidding."[24] Further, Section 309(j)(3) "directs the Commission to consider the public interest objectives" when identifying any particular characteristics of licenses and in designing methodologies for use of spectrum in the public interest.[25] Paying for the relocation of our nation's public safety systems is vital to national security, and if a public interest standard ever existed, this situation should easily fall under it.

Despite having auction authority, a number of issues, some requiring congressional action, must be resolved for a 700 MHz relocation solution to work. These include, the delay of auction 31—which the Coalition has supported[26] and the Commission should grant—and a date certain for the migration of analog television stations in the 700 MHz band to digital operation. Under a 700 MHz proposal, the first step involves a delay of auction 31, which is slated to begin

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[23] The exact spectrum to be auctioned should be determined after it is decided whether or not B/ILT licensees will move down the band to the existing general category channels. *See infra.* at p 11.

[24] 47 U.S.C. § 309(j)(1).

[25] *See* Implementation of Sections 309(j) and 337 of the Communications Act of 1934 as Amended; Promotion of Spectrum Efficient Technologies on Certain Part 90 Frequencies; Establishment of Public Service Radio Pool in the Private Mobile Frequencies Below 800 MHz; and Petition for Rule Making of The American Mobile Telecommunications Association, FCC 00-403, *Report and Order and Further Notice of Proposed Rule Making* (rel. Nov. 20, 2000) at ¶ 23. *See also,* 47 U.S.C. § 309(j)(3).

[26] *See* Letter from ARINC, AAR, FIT, ITA, MRFAC, NAM, SBT and UTC to the Honorable Michael K. Powell, Chairman, Federal Communications Commission dated April 16, 2002.

on June 19, 2002.[27] A delay of this auction will allow the Commission and public safety to review all interference resolution possibilities. To achieve this end, Rep. Billy Tauzin, with strong Energy and Commerce Committee support, has introduced a bill in the House that would delay the 700 MHz auctions.[28] This auction delay legislation illustrates Congress' sensitivity to finding a public safety solution to the interference they are currently experiencing at 800 MHz. Continuance of the auction could relegate public safety entities to an environment where interference may continue to exist. Congressional legislation needed for this plan to be successful must include the following:

- Allocation of all (with the exception of the currently licensed guard bands) of the Upper 700 MHz spectrum[29] to public safety;
- Exploration of alternative funding arrangements for public safety relocation and public safety's future operations;
- Set a date certain in which broadcasters residing in the Upper 700 MHz band must complete the DTV transition, vacating the band.[30]

As noted above, Congress should explore alternative funding arrangements for public safety's relocation to 700 MHz. While providing the greatest possible long-term benefit for public safety, this plan may be the most costly.[31]

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[27] *See* Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, WT Docket No. 99-168, *First Report and Order* (2000).

[28] H.R. 4560, the Auction Reform Act of 2002, was recently introduced into the House by the Honorable Billy Tauzin, Chairman, Committee on Energy and Commerce, and it's minority leadership, the Honorable John Dingell. This legislation, which was introduced with 50 additional original co-sponsors, seeks to delay the 700 MHz auction indefinitely and sets a deadline of one year for the Commission to report on a rescheduling timeframe.

[29] The Upper 700 MHz band includes 30 MHz of spectrum at 747-762/777-792 MHz.

[30] The Coalition recommends that this date be set at December 31, 2006, or sooner, if possible.

[31] Initial costs assessments by Motorola indicate that a move for public safety systems from the interleaved channels or NPSPAC channels to the lower portion of the 800 MHz band will cost slightly over $1 billion. This cost is based on the assumption that approximately 60-70% of the public safety radios in the band can be re-tuned in the 800 MHz band, as opposed to replaced. We can safely say, then,

While this proposal will eliminate the interference problem for public safety systems, it will not solve CMRS interference to B/ILT and traditional SMR licensees that remain in the 800 MHz band. Public safety equipment is almost identical to B/ILT equipment, and results in the same kinds of interference for B/ILT users.[32] Interference experienced by B/ILT licensees in the 800 MHz band, therefore, must still be addressed whether through a codified, Best Practices solution or through B/ILT re-banding.

In such a re-banding scenario, B/ILT and traditional SMR licensees could move down to the general category channels, where cellular systems (as defined above) would be prohibited. The B/ILT spectrum would act as a guard band against the adjacent 700 MHz public safety spectrum ending at 806 MHz (this is a low side frequency where B/ILT mobiles could help protect public safety in lieu of potential auction winners). The Commission could then auction (possibly by geographic area and without interleaved channels) the spectrum vacated by the public safety, B/ILT and traditional SMR licensees. Since public safety licensees will be leaving the band, the Commission will have 9.5 MHz of auctionable spectrum in the band.

B. The Coalition Recommends that the Commission Codify the Use of Best-Practices Solutions to Mitigate Interference in the Short-Term

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that the cost for replacement of *all* public safety radios with new 700 MHz equipment will be more costly than re-tuning existing equipment solely within the 800 MHz band. Nevertheless, definitive figures have yet to be calculated, and as such, this issue will require further examination in the immediate future.

[32] *See supra.* at p. 7 and n. 19. B/ILT users, however, tend to employ newer equipment and have a little more mobile flexibility to somewhat minimize, although not completely eliminate, the interference incurred.

To completely eliminate interference, public safety licensees[33] must leave the 800 MHz band. Whether the solution is 700 MHz or 800 MHz, new radios will need to be purchased that are more impervious to the interference that public safety entities are presently experiencing.[34] For example, new radios should be produced with narrower front-end receiver capacity that will not seek signals from cellularized systems at the upper end of the 800 MHz band.[35] Similarly, new radios could offer over-the-air programmability to minimize the potential for interference. The point remains, however, that interference will continue to exist until new equipment can be deployed. Therefore, short-term interference resolution will still be required during any relocation process.

Best Practices offers solutions that, when employed in many case-by-case situations, has proven effective in mitigating interference between public safety systems and cellularized operators. The Commission should codify, or at a minimum emphasize, the need for case-by-case cooperation between interfering parties during any progression to complete any type of interference resolution. Examples of Best Practices mitigation tactics include, modifications for either system; filters for CMRS transmissions; and segregation of public safety and CMRS spectrum assignments which can serve as short-term remedies for existing systems on a case-by-case basis.[36] Licensees seeking to expand their systems, can minimize the potential for interference through advanced planning using frequency coordination procedures; purchasing

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[33] As noted above, the Coalition also recognizes that Nextel could also be moved out of the 800 MHz band.

[34] 800 MHz equipment cannot be retuned to 700 MHz or 900 MHz. Furthermore, 900 MHz channels are spaced 12.5 kHz apart, half that of the 25 kHz spacing at 800 MHz.

[35] Exact channel limitations on the front end of a receiver will depend on the rebanding or relocation proposal accepted by the Commission.

[36] Best Practices at p. 11-13.

equipment with high intermodulation specifications; and designing public safety systems to produce higher signal strength levels that reduce the impact of CMRS systems in the area.[37]

The Commission has the opportunity not only to establish a structure for Best Practices solutions that will yield positive individual interference resolution results in a given area, but also apply those tenets to both public safety and B/ILT licensees experiencing interference from cellular systems as the quickest and least expensive way to mitigate harmful interference.[38] Furthermore, by codifying the use of Best Practices solutions, the Commission may minimize the costs associated with relocation for public safety and/or B/ILT entities. If a Best Practices solution eliminates the harmful interference, then relocation, if necessary, could be delayed until new equipment can be deployed by the public safety or B/ILT entity. Best Practices solutions, therefore, could save public safety entities, B/ILT licensees and the American public large sums of money. This alternative will certainly be much less costly than any relocation and re-banding proposal.

C. The Coalition Suggests that the Commission Consider Employing a Re-banding Solution if a Move for Public Safety to 700 MHz is not Achievable

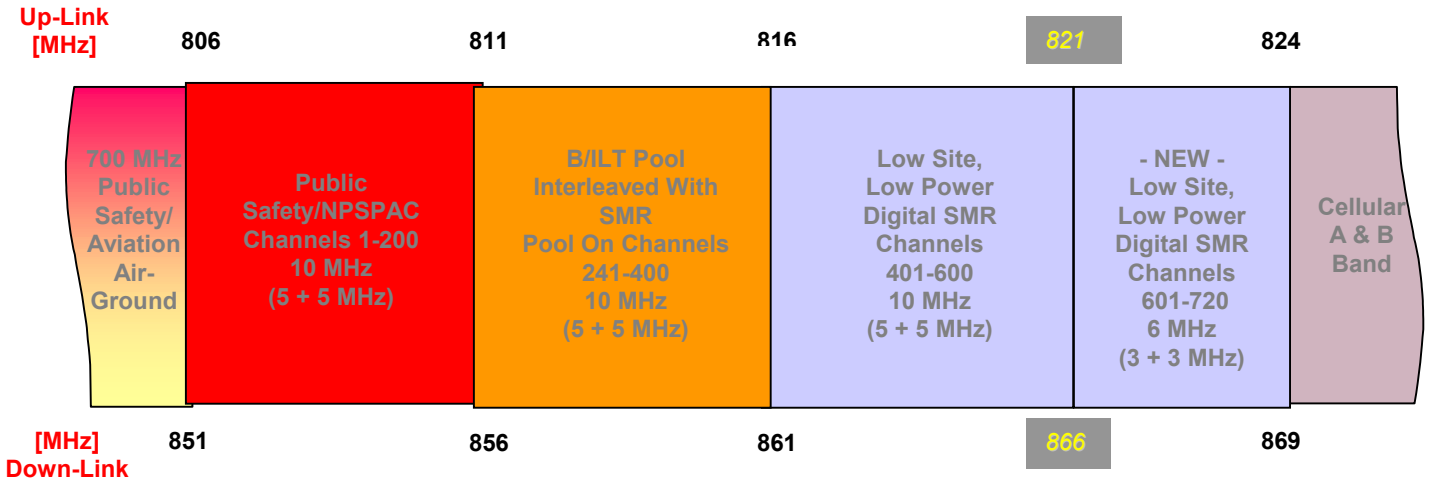
The Commission may consider an 800 MHz re-banding solution for two reasons: (1) possibly to act in conjunction with a 700 MHz plan to offer a less interference-prone

[37] Best Practices at p. 13-14.

[38] In the course of establishing a Best Practices structure, the Commission could clarify the payment mechanism for quelling case-by-case interference (such as an "interfering party pays" clause) or relocating an entity, should a Best Practices solution fail to remedy the interference.

environment for B/ILT licensees and traditional SMR licensees who will remain at 800 MHz; or (2) to act as a backup plan in the event that a 700 MHz solution proves infeasible.

The Coalition believes the following proposal presents an alternative plan to mitigate public safety interference if, and only if, a 700 MHz plan cannot be implemented.



The Coalition's bandplan proposal is as follows:

1. Public Safety

To separate public safety from cellularized SMR operations and from the adjacent cellular "A" and "B" bands, we propose to retune public safety systems, as necessary, to a contiguous block of spectrum in the 851-855.9875 MHz band. Public safety systems already operating in this spectrum will be allowed to continue operations without disruption.

Upon completion of retuning from the 70 interleaved and NPSPAC channels, public safety ends up with 10 MHz of spectrum, where they previously held 9.5 MHz plus their holdings in the general category pool. Furthermore, no cellular-like system architecture would

be permitted in the proposed public safety band.[39]

2. Business and Industrial Pool

B/ILT users will retune, as necessary, to the 856-860 MHz band. B/ILT systems already operating in this spectrum, and in 860-861 MHz, will be allowed to continue operations without disruption. B/ILT incumbents in the former general category pool will move to former public safety pool channels within 856-860 MHz or to available spectrum on the original 856-860 MHz B/ILT pool channels. Site-by-site, traditional SMR licensees in the general category pool will also be relocated to the same band. Incumbents, however, will only be required to move when necessary.

This separation will permit a paired 4 MHz buffer zone between public safety and systems employing a cellular-like architecture. Based on preliminary data, it appears that 4 MHz of separation should be sufficient to mitigate, while not altogether eliminating, most of the intermodulation and front-end overload potential until narrower front-end radios can be employed.[40]

No cellular-like system architecture would be permitted in the proposed B/ILT and traditional SMR band below 860 MHz (channel 360). This will allow incumbents, or B/ILT licensees seeking new business opportunities, to employ a cellular-like system architecture on channels 361-400, should they seek to expand operations or promote new advanced services. Similarly, EA licensees seeking to employ a cellular-like system architecture can swap, through partial assignment, their 856-859 MHz licenses with 860 MHz EA licensees that do not wish to

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[39] *See generally,* Guard Band Service Rules.

[40] Before finalizing any re-tuning plan, equipment manufacturers should be heard from in detail as to the causes and cures for the interference problem(s). These parties are in the best position to develop

operate with a cellular-like infrastructure. By leaving 860-861 MHz open to cellular-like system architectures, *everyone in the band* (B/ILT, traditional SMR, EA licensees and even public safety licensees, if they so desire) may explore new technology options or system expansion possibilities in the 800 MHz band.

Traditional SMR users in the 856-861 MHz band will not have to relocate if they do not employ a cellular-like system architecture, which obviates the need to "undo" the auction of the Lower 80 SMR channels. Furthermore, traditional site-by-site, incumbent SMR providers in the general category pool will be allowed to retune to vacated public safety channels or old B/ILT channels in the interleaved spectrum. Traditional SMR licensees, therefore, neither gain nor lose spectrum under the 800 MHz re-banding proposal.

3. SMR Licensees

The SMR pool remains the same for the Lower 80 SMR licensees, the Upper 200 MHz licensees, and in the 900 MHz band. By permitting Lower 80 SMR licensees to remain in their current spectrum allocation, the Commission can keep its promise not to relocate licensees that have already undergone one retuning process from the Upper 200 SMR channels. While Lower 80 SMR licensees will not be permitted to deploy cellular-like system architectures in the 856-860 MHz band, they may seek business deals with licensees on frequencies above 860.0125 MHz to cellularize.

800 MHz General Category EA licensees will be offered one of two options. First, they have the option of receiving a comparable EA license in the former NPSPAC spectrum. The EA licensee will lose a small number of channels in such a spectrum swap, but they will be trading

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the record on this matter.

encumbered spectrum without a right to relocate the incumbent for clear, contiguous spectrum. Should an EA licensee choose this option, it will be required to fund a pro-rata portion of relocation, if necessary, of 800 MHz general category incumbents, B/ILT relocatees, as well as interleaved public safety and NPSPAC public safety relocatees.[41]

The second option for a general category EA licensee involves returning their license to the Commission for cancellation. In doing so, they would receive a refund from the Commission of their original net auction payment. The refund would be paid for through the subsequent auction of the NPSPAC license that *would* have been the comparable spectrum to be traded.

4. *Relocation Timing and Logistics*

There are a few different ways to begin the relocation process under this plan. The Coalition notes that the following are our preliminary thoughts on the triggering and reimbursement mechanisms. Further examination of the financial considerations of this proposal will certainly be required. The Coalition has outlined the four possible ways in which relocation would be triggered below:

- When the incumbent licensee experiences interference;
- When a general category EA licensee moves to the former NPSPAC channels and requests that the NPSPAC incumbent move to the former general category channels;
- When a public safety or B/ILT incumbent seeks to expand operations or upgrade technology;
- When a public safety incumbent on an 856-860 MHz channel seeks to move to an 851-855 MHz channel and needs to displace a B/ILT incumbent.

[41] It is difficult to determine, at this time, the number and size of the operators who might wish to relocate to the NPSPAC channels, especially given the relative size of the band. As such, this issue will require further examination to determine whether a NPSPAC re-tuning is desirable, or even feasible, for relatively small EA license winners of general category channels.

In the first scenario, an incumbent licensee experiences interference and requests that the retuning process begin. For example, if a NPSPAC public safety incumbent is experiencing interference, the entity will be coordinated spectrum in the general category pool. In this case, the general category EA licensee, most likely, did not request the move to comparable NPSPAC spectrum, but instead surrendered its license.[42] General category incumbents, with the exception of the incumbent authorizations held by the EA licensee, move to the 856-860 MHz band, if necessary. The costs associated with this move should be paid, on a pro-rata basis, by the relevant cellularized licensees that are causing interference, which may include an 861-865 SMR licensee, a cellular "A" block licensee and/or a cellular "B" block licensee.

Another example of incumbent interference under this scenario would include interference experienced by an 856-860 MHz B/ILT or non-cellularized SMR licensee from an 861-865 MHz EA licensees. If a non-public safety, non-cellularized incumbent in the 856-860 MHz band experiences interference, the EA licensee must cure the interference at its own expense and may request a frequency change if necessary to solve the interference problem.

Under the second scenario, a general category EA licensee requests a move to the former NPSPAC channels for the same EA. NPSPAC licensees, if any, then move to the general category frequencies. General category incumbents, with the exception of the incumbent authorizations held by the EA licensee, move to the 856-860 MHz band, if necessary. Under this scenario, the EA licensee requesting the initial move pays for relocation.

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[42] We can assume that the general category EA returned its license because the public safety entity initiated the process, as opposed to the general category EA licensees seeking comparable NPSPAC spectrum.

The third possible relocation trigger involves the upgrade of existing technology or expansion of current operations for public safety or B/ILT licensees. In either one of these two cases, relocation to the appropriate pool should begin for the licensee. Relocation based on this premise could cause relocation reimbursement to be reduced, as a licensee may already be engaged in re-tuning their radios for expansion and/or upgrade, which will reduce the need for reimbursement.

To begin the relocation process for a public safety entity experiencing interference in the 856-860 MHz band, the public safety entity should be coordinated for the upper general category channels, as close to 855 MHz as possible. In effect, this moves the public safety entity to an old B/ILT channel and not into an environment where a general category EA license may cause additional interference. General category incumbents, if they are different than the EA licensee, or the incumbent 855 MHz B/ILT licensee will be moved to a 856-860 MHz channel that has been vacated by public safety or other suitable B/ILT channels in the band. Under this fourth scenario, all moves will be paid for by the EA licensee causing interference to the original public safety licensee.

Throughout these retuning processes, non-cellularized incumbent licenses would be entitled to full cost reimbursement of retuning during the first five years after a ruling has been made in this proceeding. Relocations that occur after the fifth year and through the tenth year will be reimbursed on a sliding scale. No reimbursement will be given to entities seeking relocation after year ten.

If the Commission elects any portion of a re-banding solution, the Coalition recommends that the Commission allow the Land Mobile Communications Council (LMCC) to form a

coordination committee whose purpose would be to effectuate the coordination of channel plans for moves and reimbursement assessment for incumbents. In the Commission's PLMR re-farming proceeding, it stated,

> "A minimum set of technical coordination procedures to which all frequency coordinators must adhere is the least burdensome method of providing all members of the PLMR community with confidence that all new and existing radio systems will be adequately protected from interference. …Rather than establish specific procedures at this time, however, we believe that the coordinators should attempt to reach consensus themselves on the applicable coordination procedures."[43]

Similarly, the coordination committee in this proceeding will require authority and flexibility to establish applicable coordination procedures that complete the process in an efficient and effective manner for all impacted licensees. Moreover, the committee will create an entity to perform the actual retuning coordination and reimbursement work, and will consist of any certified 800 MHz coordinator that wishes to participate. The new committee could be funded by a fixed payment to be initially agreed upon by Nextel.

5. "Campus" Systems

Campus systems tend to be more immune to interference from cellular system architectures because they can better control their operating environment, making them the "best neighbor" to cellularized systems. Campus systems under this proposal will be defined by an operating area with a five mile radius or less, and further characterizations of campus systems, such as antenna height and ERP limitation, can be developed by the designated coordination committee.

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[43] *See* Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignments Policies of the Private Land Mobile Services, *Second Report and Order*, PR Docket No. 92-235 (rel. Mar.

The Coalition believes that the last four contiguous channels adjacent to the first channel allowing a cellularized infrastructure (859.9125 MHz, 859.9375 MHz, 859.9625 MHz, and 859.9785 MHz) should be reserved in the re-tuning process for campus systems.[44] By offering four contiguous channels for campus systems, users could take advantage of new technologies for high-throughput, data-only systems requiring at least 100 kHz of contiguous spectrum, while still protecting less immune B/ILT and public safety licensees in the lower 800 MHz spectrum.

6. Motient

Motient operates a system, solely in the 800 MHz band, which is notably different from the other commercial networks deployed in the band, utilizing more than 2,300 base stations to provide nationwide service to approximately 240,000 subscribers. As the second largest licensee in the 800 MHz band, Motient could be subject to large relocation costs. Should the Commission ultimately determine to re-band at 800 MHz, the Coalition suggests that the Commission consider grandfathering the use of Motient's two core channels of operation, 855.0125 and 855.8375.[45] If Motient were to move from these frequencies, each of their 240,000 units would need to be re-tuned twice and their 2,300 base stations would need to be reengineered to new 800 MHz frequencies.[46]

To alleviate some of the costs associated with relocation, the Coalition suggests that 855.8375 MHz and 855.0125 MHz should be carved out of the new public safety pool,

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12, 1997) at ¶ 43.

[44] The first channel in the group is a business channel, while the upper three channels are former public safety channels. Incumbent business pool licensees on 859.9125 MHz will be permitted to remain on this channel.

[45] IBM Research and Development, Inc., 53 RR 2d 675, 677 (1983), where Motient was granted a waiver for use of 855.8375 MHz, or alternately 855.0125 MHz, for system control on a nationwide basis.

[46] If these two core channels were available to Motient at all locations nationwide, Motient's rebanding costs would be reduced by approximately $70 million.

permitting Motient to remain in its existing spectrum. When it becomes necessary to accommodate public safety users, Motient can move off of 855.0125 MHz for 855.8375 MHz. Users on 855.8375 MHz would then need to retune within their appropriate pool.

7. Interim Licensing Rules

Under this plan, the Coalition believes that some interim licensing rules must be followed to ensure the most effective re-tuning procedure. No new licenses should be assigned on frequencies in the 854.7875-860.9875 MHz band that are being assigned to different pools until the relocated entities have been licensed. For example, there will be no new licensing on 856-860 MHz channels that were previously allocated to public safety, but have now become B/ILT channels. These channels will only be used to relocate B/ILT and traditional SMR incumbents. In addition, no new licensing should occur on 855 MHz channels that were previously B/ILT channels, and have now become new public safety pool channels. These channels will only be used to relocate public safety incumbents. New licensing may continue, however, on the 856-860 MHz B/ILT channels that have always been in the B/ILT pools. Furthermore, after completion of the licensing process for entities that need re-tuning, the former 856-860 MHz public safety pool frequencies will become available for new licensing for business or I/LT use.

This plan does not solve the interference problems that exist for public safety and B/ILT users at 800 MHz, but it may work as a short-term mitigation tool, if the Commission determines that a 700 MHz relocation plan is not achievable. Under this plan, entities suffering the greatest interference can relocate immediately, mitigating some of their interference problems, with further resolution after new equipment can be deployed with narrower front-end capability and other interference limiting technologies.

While the Coalition emphasizes that relocating either public safety or Nextel licensees to the 700 MHz band presents the best possible technical solution to the interference problem currently experienced at 800 MHz, we acknowledge that by retuning public safety and B/ILT licensees within the 800 MHz band instead of relocating them to 700 MHz or 900 MHz, the cost of implementation will be significantly reduced. Preliminary costs assessments by Motorola indicate that a retuning process similar to the original NAM/MRFAC proposal will reduce the costs of implementation by $1.1 billion over Nextel's proposal, a significant amount of money that could be used for other critical needs, such as public safety relocation, interoperability and homeland security.[47] Simply put, Motorola's cost assessment demonstrates something that we already knew; retuning is less expensive than purchasing all new equipment. Solving the interference problem, if possible, through this alternative is still quite expensive, but the Coalition, after months of deliberation, felt it best to provide the Commission with the best possible alternatives that could solve the 800 MHz interference problem.[48]

III. Conclusion

The Commission has the opportunity to improve our nation's vital public safety needs. If the goal of this proceeding is to solve the interference problem experienced by the public safety community, the Coalition recommends that the Commission move public safety users (or Nextel

[47] Motorola's costs assessment specifically indicates that Nextel's proposal would cost over $2.7 billion, when considering the retuning and partial replacement (for older radios) of public safety entities and complete replacement of B/ILT equipment. On the other hand, simply retuning radios (and again having to replace the older radios in the band) without relocation to other frequency bands for all licensees, as illustrated under the original NAM/MRFAC proposal, will cost just under $1.6 billion. These figures are preliminary, however, and should be subject to further examination.

[48] The Coalition also recognizes that Canadian and Mexican border regions will need careful consideration, and plans to address these issues in a future filing.

subscribers) to 700 MHz, and codify Best Practices solutions as an interim step until the relocation process can be completed. The Commission may also consider an 800 MHz re-banding plan to act as a supplement to the 700 MHz plan for B/ILT interference resolution, or lastly, as a way to minimize the public safety and B/ILT interference experienced, if a 700 MHz plan is not achievable.

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